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Public Health Services

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A collaborative study including Dr. Gulzar Shah, Director of Research, examines public health services most commonly provided by local health departments in the United States. The primary purpose of this research is to identify the most commonly performed public health services by local health departments (LHDs) and highlight variation by LHD characteristics. Data were drawn from the 2008 and 2010 National Profile of LHDs, conducted by the National Association of County and City Health Officials (NACCHO). The descriptive analysis aims to further the essential dialogue triggered by a recent Institute of Medicine (IOM) report about the standard minimum set of services that all LHDs should provide. This study identified a set of 22 activities performed by LHDs that are common in jurisdictions of all sizes. Notable differences in most commonly performed services were found by the size of population in LHD jurisdiction, presence of board of health, type of LHD governance, per capita expenditures, and size of workforce.

Cholera Transmission Dynamic Models

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Dr. Isaac Fung, assistant professor of epidemiology examines cholera transmission dynamic models for public health practitioners. Great progress has been made in mathematical models of cholera transmission dynamics in recent years. However, little impact, if any, has been made by models upon public health decision-making and day-to-day routine of epidemiologists. This paper provides a brief introduction to the basics of ordinary differential equation models of cholera transmission dynamics. We discuss a basic model adapted from Codeço (2001), and how it can be modified to incorporate different hypotheses, including the importance of asymptomatic or inapparent infections, and hyperinfectious *V. cholerae* and human-to-human transmission.

We highlight three important challenges of cholera models: (1) model misspecification and parameter uncertainty, (2) modeling the impact of water, sanitation and hygiene interventions and (3) model structure. We use published models, especially those related to the 2010 Haitian outbreak as examples. We emphasize that the choice of models should be dictated by the research questions in mind. More collaboration is needed between policy-makers, epidemiologists and modelers in public health.